

CLAIMS

1. A furan polymer impregnated wood, characterized by wood impregnated with a polymerizable furfuryl alcohol monomer mixture containing at least water, furfuryl alcohol, a stabilizing co-solvent selected from acetone or a low-temperature boiling alcohol such as methanol, ethanol or isopropanol and combinations thereof, and an initiator selected from maleic anhydride, phthalic anhydride, maleic acid, malic acid, phthalic acid, benzoic acid, citric acid, zinc chloride, aluminum chloride, other cyclic organic anhydrides and acids and combinations thereof.
2. A method for preparing a furan polymer impregnated wood, characterized in that the wood is impregnated by one impregnation step with polymerizable furfuryl alcohol monomer mixture containing at least furfuryl alcohol, stabilizing co-solvent selected from acetone or a low-temperature boiling alcohol such as methanol, ethanol or isopropanol and combinations thereof, water, and at least one initiator selected from maleic anhydride, phthalic anhydride, maleic acid, malic acid, phthalic acid, benzoic acid, citric acid, zinc chloride, aluminum chloride, other cyclic organic anhydrides and acids and combinations thereof, followed by a curing step.
3. The method of claim 2, characterized in that said curing is performed by an intermediate co-solvent removal step, followed by a heat curing step.
4. The method of claim 2, characterized in that said curing is performed by maintaining approximately room temperature for some days or weeks.
5. The method of claim 2, characterized in that said curing is performed by use of a temperature in the range of from about 70°C to about 140°C.
6. The method of claim 2, characterized in that said curing requires conventional kiln drying using the normal temperature schedules for drying untreated, green lumber of the same size and species as the impregnated material, with temperatures at the beginning of curing about 45°C and at the end about 90°C, with a final post-curing step between 100°C to 140°C for material with maximum hardness and dryness.
7. The method of claim 2, characterized in that said curing and drying can be accomplished using high-temperature kiln schedules in the 80°C to 120°C temperature range with a possible final post-curing step between 120°C to 140°C for material with maximum hardness and dryness.
8. The method of claim 2, characterized in that curing is performed by submerging

the treated material in hot oil, preferably 80°C to 120°C, with the temperature either fixed or starting lower in the range and increasing as curing and drying proceeds.

- 5 9. Use of a furan polymer impregnated wood as prepared according to claim 1 or as prepared according to any of claims 2 to 8, as building parts (fascia, cornice, siding, sills, frames, millwork), boat parts (frames, planking, decks), marine items (docks, piers, lobster traps, weir poles), outdoor items (furniture, decks, railings and stairs, walkways, boardwalks, playground equipment), bridge parts (beams, railings, decking), railway sleepers, cooling tower slats, utility poles, heavy timbers, fenceposts, stakes, highway items (guard rail posts, guard rail plates, sign posts, light poles), flooring and containers (tanks, buckets).
- 10